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RECIPE REPAIRS

HOW TO DO IT
AND WHY WE NEED IT

for
      healthy eating
              weight control
                        disease prevention

for
      your life
              your family
                     your community

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Food choices: What do we know and when did we know it?

The first 50 years of the 20th century brought the discovery of vitamins plus essential amino acids and fatty acids that support human growth, metabolism and hormone action. The next fifty years gave knowledge of how transmission, expression and action of DNA-coded genetic information proceeds as infants grow and mature into healthy adults.

Halfway through the 20th century, doctors saw regional food habits linked to chronic inflammatory heart disease. Rates of CHD death/100,000 for American (200), Mediterranean (100), Japanese (50) and Inuit (10) **lifestyles** related to intakes of omega-3 (n-3) and omega-6 (n-6) nutrients. These essential nutrients form 20- and 22-carbon highly unsaturated fatty acids (HUFA) that are stored in tissues and released **when needed**. The proportions of **n-6 in HUFA** for American (78%), Mediterranean (60%), Japanese (35%) and Inuit (20%) fit the risk for inflammatory cardiovascular disease. The healthy ethnic habits had **developed over thousands** of years, long before people knew about essential nutrients and molecular medicine.

Two 20th century changes gave the American lifestyle high levels of chronic **inflammatory** health conditions.

1.- Personal energy expenditure decreased as urban lifestyles replaced rural routines. Machines and technology decreased the need for human physical activity. With escalators, power brakes, power steering and TV remotes, energy expenditure no longer balances traditional **food energy intake**. Obesity has become pandemic. Consumer health needs balanced intake and expenditure of energy.

2.- Food production, transport, processing and marketing made foods available year-round, free from seasonal limits and troublesome preparation times. Most **21st century meals** are no longer prepared by families cooking at home and choosing the ingredients. Decisions by people outside the home with priorities other than health now control nutrient contents. Consumer health needs balanced omega 3 and 6 nutrients.

This is the context in which tools for **Recipe Repair** help you better balance food **energy intake and expenditure** and also **omega-3 and omega-6** nutrients.

**This ebook is at <u>fastlearner.org/recipe-repairs/</u>
open & save it to your desktop to read
with active internet hyperlinks**

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Balancing energy intake and expenditure:

While each of us has unique genetic details, we all have very similar metabolism of the foods we eat. When we eat more food energy than we need to move around, our liver converts the extra carbohydrate, protein and fat into **lipoproteins** that move through the blood and accumulate in body fat. The hard truth is that food energy keeps us moving, while unused energy makes us fat.

If you have trouble losing weight, you might like to know your daily basal caloric expenditure is near **11 x your weight in pounds**. Any food energy above that will need exercise to burn it. Handling intake and expenditure is easy for computers and hard for humans, so we made a **tool** for that. Many daily activities burn only about 0.5 Cal per pound per hour: sleeping, shaving, reading newspaper, eating, riding in a car, bus or train, standing in line, computer & internet use, watching TV. Adults with this sedentary lifestyle burn only about 220 Cal every 3 hours.

That means a 1,000 Cal meal has during the next 3 hours a 780 Cal excess that may convert to fat and cause a transient **inflammatory dysfunction**. The dysfunction usually resolves itself in time, but occasionally it converts into a chronic **inflammatory locus**. Repeated exposure to over-sized meals lets unresolved loci **accumulate, day after day** and year after year, and develop into clinical atherosclerotic heart disease.

All American teenagers in a large clinical study had some vascular damage which was greater with age. Coronary heart disease (CHD) occurs in nearly 40% of 40-year-old, 60% of 60-year-old and 80% of 80-year-old Americans. The risk for converting a transient vascular dysfunction into a **chronic inflammation** with disease progression is less with omega-3 than omega-6 fats. CHD deaths/100,000 for American (200), Mediter-ranean (100), Japanese (50) and Inuit (10) **lifestyles** link to the omega-6 and omega-3 fats in foods eaten.

Recipe repair leads to eating fewer calories per meal with foods having less omega-6 and more omega-3. Nutrition facts labels on foods give energy content, and newly designed omega 3-6 balance scores give the **likely impact** a food will have on the omega 3-6 balance accumulated in the body. That balance is important for maintaining **wellness**.

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Managing energy balance requires careful logic

Computers can combine all the calories ingested with foods and expended with activity, although humans must enter the diverse data in a credible manner. Activities are often described as **multiples of basal energy expenditure (MET)**: very light (1.5), light (2.5), moderate (5.0), heavy (7.0). However, each activity occurs in a small part of a day's 24 hours, and the overall daily expenditure rate is often closer to basal than many people realize. The **misunderstanding leads to overeating.**

Many on-line personal energy "calculators" use self-selected lifestyle descriptors: very light, light, moderate, heavy. We must NOT use the intensity values above for overall daily expenditure rate. Table 1 on the next page shows how overall daily expenditure combines all of the activities in a day. It is simply **A x B x C** [where **A**ctivity= burn rate; **B**ody Weight= pounds; and **C**lock Time= hours]. You can see the total daily 2,073 Cals are only 1.2 times the basal 1,745 Cals. It's easy to be sedentary.

Table 1 is a tool for making credible estimates and interpretations. Expended calories/day must be equal to or greater than daily **food energy intake** to avoid weight gain. The Table shows how reducing TV viewing time from 2.5 to 1.0 and adding 1.5 hours of dancing increases daily expenditure from 2,073 to 2,400 Calories. Other ways to burn excess energy are in Table 2 with MET values (Cal/kg/hr).

Importantly, daily activity levels are often below what the World Health Organization regards as needed for cardiovascular fitness. Insufficient physical activity is a predictive risk factor for **major chronic diseases**. A good approach for many Americans is to make [**CalsOut/day minus CalsIn/day]** be a positive number. Don't be negative.

Extra food calories are converted to fat and cholesterol. Keys showed in 1956 that elevated blood cholesterol levels are a convenient biomarker of **imbalanced food energy** intake and expenditure. Treadmill exercise after a breakfast gave slower and lower increases in blood cholesterol compared to a sedentary condition. Eating fewer calories per meal gives a lower rise of fat and cholesterol in blood lipoproteins and less likelihood of transient postprandial **endothelial dysfunction**.

Table 1 - Discover your daily burn rate
Download an active Table 1 to see your CalsOut/day

Enter your weight, select activities, and hours spent.
Activity Intensity = Metabolic Equivalents (MET)

	Pounds	Kilograms
Enter Your Body Weight >	160	72.7

Select Activity	MET	Enter Clock Hours	Calories
sleeping	0.9	8.50	556
shaving, brush teeth	1.1	0.50	40
home - cooking	2.0	0.50	73
walk, 3.0 mph	3.3	0.20	48
sitting, ride car/bus/train	1.0	1.00	73
sitting, computer	1.1	3.00	240
sitting, watch TV	1.0	1.00	73
sitting, reading	1.1	3.40	272
home - eating	1.3	1.00	95
sitting, driving car	1.5	1.30	142
sitting, watch TV	1.0	2.50	182
home - vacuuming	3.5	1.10	280
	0.0		0
	0.0		0
	0.0		0
This day's activity in MET & Cals	1.2	24.00	2073
Basal activity in MET & Cals	1.0	24.00	1745

The daily CalsOut of 2,073 is only 1.2 x basal. Official daily **Recommended Dietary Allowances (RDA)** in MET units are very light (1.3), light (1.5), moderate (1.6), heavy (1.9).

Omega Meals counts the calories eaten in a day, and Shows you why you likely need more exercise in your day.
Let your [**CalsOut – CalsIn**] be positive once in a while.

CalsOut - CalsIn

Table 2 – Ways to burn excess calories
(intensity in MET values)

Activity	MET	Activity	MET
badminton, social	4.5	music, guitar, sitting	2.0
basketball, casual	6.0	music, guitar, rock	3.0
basketball-shoot basket	4.5	rollerskate, 5.9mph	5.7
bicycling 6 mph	4.0	rope skipping, 66/min	9.8
bicycling 11 mph	6.0	running, 5mph	8.6
bowling	3.0	running, 6mph	10.2
bridge playing	1.5	running, 8mph	13.3
canoeing 2.5mph	3.0	run, 6mph @5%	14.3
dance - aerobic light	4.0	shaving, brush teeth	1.1
dance - aerobic medium	6.0	sitting, computer	1.1
dance - aerobic heavy	9.0	sitting, driving car	1.5
dance - ballroom	4.0	sitting, reading	1.1
dance - polka	5.0	sitting, ride car/bus/train	1.0
fishing, boat	2.5	sitting, watch TV	1.0
fishing, riverside	3.5	skating, ice, 8 mph	4.0
golf, carrying clubs	4.5	sleeping	0.9
golf, pulling cart	4.1	softball	3.6
golf, riding cart	3.5	standing in line	1.2
home - cooking	2.0	swim, snorkling	5.0
home - eating	1.3	swimming, 0.9 mph	4.3
home - feed animals	2.5	swimming, 1.2 mph	7.0
home - make beds	4.0	swimming, 1.6 mph	11.5
home - riding mower	2.5	table tennis	4.0
home - snow shovelling	5,1	tennis, singles	7.5
home - vacuuming	3.5	volleyball, social	4.0
home - wash dishes	2.1	walk, 2.0 mph	2.5
home - wash windows	3.0	walk, 3.0 mph	3.3
home - water plants	2.5	walk, 3.0 mph @5%	5.4
home - wood cutting	6.0	walk, 3.0 mph @10%	7.4

Approximate energy expenditure intensities as MET are listed by
M.Jette et al.,1990 and **Family Practice Notebook**.

Omega-3 and Omega-6 act differently

The biomarker for excess food energy, blood cholesterol, predicts CHD risk **ONLY when** pro-inflammatory n-6 HUFA exceed the anti-inflammatory n-3 HUFA. While **high food energy** intakes always prompt formation of cholesterol and fat, they may NOT lead to death when tissues have more n-3 than n-6 HUFA. The transient **endothelial dysfunction after a meal** may resolve faster when **competing n-3 HUFA** decrease the n-6 HUFA recruitment of inflammatory cells.

As a result, **HUFA balance** is part of CHD **etiology** and a valid marker for health risk assessment. The benefit of n-3 HUFA maintaining **healthy endothelium** was seen when eating fish-oil rich in n-3 HUFA increased markers for endothelial repair, and lowered markers of endothelial damage. Eating mackerel and sardines raised circulating endothelial progenitor cells related to plasma levels of the n-3 HUFA, EPA (20:5n-3).

Risk links to %n-6 in HUFA. Traditional ethnic food choices gave different proportions of n-6 in HUFA for American (78%), Mediterranean (60%), Japanese (35%) and Inuit (20%). This **health risk assessment** biomarker fits the relative risk for inflammatory cardiovascular disease. HUFA balance also acts in many **co-morbid** health conditions. Table 1 is a good tool to ensure CalsIn do not exceed CalsOut and raise the risk for omega-6-amplified inflammation. Benefit links to %n-3 in HUFA, which is American (22%), Mediterranean (40%), Japanese (65%) and Inuit (80%). Aim for 50% n-3 in HUFA to lower risk for chronic inflammatory conditions.

A good tool to ensure a healthy HUFA balance is the **omega 3-6 balance score**. Positive balance scores give benefit while negative scores give risk. **A balanced diet is an anti-inflammatory diet.** Scores for over 5,000 familiar foods are at **omega3scores.com/**.

Another tool, **Omega Meals**, carefully combines food items into recipes and daily food plans. It uses a credible **algorithm** to estimate food's likely impact on caloric and HUFA balance and resulting risk for unwanted **chronic health conditions**. Such tools allow careful quantitative handling of data for estimating energy and nutrient balances. They allow credible interpretations of benefit from Recipe Repairs that **NIX the 6 and EAT the 3**.

Tools to make Recipe Repairs

To start making repairs, learn likely impacts of foods on the **health risk assessment** measure, HUFA balance. An **EAT3** list has items with the most positive omega 3-6 balance scores. It quickly shows foods that will raise the %n-3 in HUFA. A **NIX6** list has foods with the most negative scores that raise the %n-6 in HUFA. Repairs work well if you **NIX the 6 and EAT the 3**.

Omega 3-6 balance scores of more than 5,000 familiar foods are at **omega3scores.com**. Eating **twenty** different food items per day will likely give you most of the nutrients you need. Plan to eat foods with Scores more positive than the USA average **near - 6.5** (which corresponds to a HUFA balance near 80% n-6).

Omega Meals software combines positive and negative food scores for an **"ordinary" meal**. Recipe Repair replaces foods with very negative scores by foods with more positive scores. Choose foods to lower the %n-6 in HUFA **health risk assessment** value and lower the risk for chronic inflammatory conditions.

Discover your likely HUFA balance.

Daily Meal Time Plan for "Ordinary" HUFA Balance

Plan No. 1031

Main Menu | Food Groups | Client Info | Print

very good effect
good effect
OK effect
not very good effect
bad effect
awful effect

Breakfast	Balance	Serving Measure and Grams Weight		Servings	Kcals
B Milk, reduced fat, fluid, 2% milkfat, with added	-0.3	1 cup	245	0.5	62
B Butter, without salt	-0.9	1 pat (1" sq, 1/3" high)	5	1	36
B Cereals ready-to-eat, KELLOGG, KELLOGG'S	-3.1	1 cup (1 NLEA serving)	30	1	123
B Blueberries, raw	-0.5	50 berries	68	1	39
B Bread, wheat, toasted	-4.5	1 slice	24	1	75

Lunch	Balance	Serving Measure and Grams Weight		Servings	Kcals
L Oil, olive, salad or cooking	-10.2	1 tablespoon	14	1	119
L Pork, fresh, loin, tenderloin, separable lean only,	-4.1	3 oz	85	1	159
L Lettuce, iceberg (includes crisphead types), raw	2.2	1 cup shredded	72	1	10
L Spinach, raw	4.9	1 cup	30	1	7
L Avocados, raw, California	-10.0	1 fruit, without skin and	136	0.5	114

Dinner	Balance	Serving Measure and Grams Weight		Servings	Kcals
D Cheese, gouda	0.4	1 oz	28	3	303
D Broccoli, cooked, boiled, drained, without salt	1.9	1 stalk, large (11"-12" long)	280	1	98
D Rice, white, short-grain, enriched, cooked	-0.2	1 cup	186	0.33	80
D Turkey, all classes, leg, meat and skin, cooked,	-15.8	1 unit (yield from 1 lb	71	2	295

Snacks	Balance	Serving Measure and Grams Weight		Servings	Kcals
S Ice creams, chocolate	-0.5	.5 cup (4 fl oz)	66	1	143
S Apples, raw, with skin	-0.7	1 small (2-3/4" dia)	149	1	77
S Nuts, walnuts, english	-44.4	1 oz (14 halves)	28	0.5	93

Overall daily plan contents 1833 kcals.
Overall daily allowance is 1800 kcals.

Overall Average Balance Score = -6.7
Health Risk Assessment Value = 86%

Health Risk Assessment (HRA) Predicts Risk

% n-6 in HUFA is an HRA Value

Meal plan repairs

A **short video** helps you use **Omega Meals**. **Repair** of the plan on page 9 replaced turkey (-15.8) with salmon (+52.6) to give a positive overall Score of +3. **Other repairs** further NIX the 6 and EAT the 3. It's easy. You just **accentuate the positive and eliminate the negative**.

Foods that humans ate daily for thousands of years did **NOT** have items like soybean oil, -50; mayonnaise, -46; tub margarine, -39; microwave popcorn, -37; "Italian" salad dressing, -35; potato chips, -29; stick margarine, -28; vegetable shortening, -28; peanut butter, -24; tortilla chip snacks, -24. When these items were removed from the **top 100 foods** eaten by Americans, the average score for remaining foods was near that for a Mediterranean diet.

Further back in time, a possible diet of **tropical vegetation** might give a HUFA balance of 32%, near that for Greenland Inuits. This illustrates how diverse foods can give fully sufficient daily meal plans. Choose what tastes good, is easily found in the garden or store and gives recommended daily allowance levels of needed nutrients.

Recipe repairs

A friend of mine used flax meal to make an "omega-3 cake", and its recipe is in the working files of Omega Meals. He forgot to look at omega 3-6 balance for ALL ingredients. Neglect of details is a "hidden" problem that needs repair.

Omega Meals also has in its files the repaired cake recipe made by replacing: eggs (-18.4) with fat-free egg substitute (0.0); 2 tbsp of canola oil (-11.2) with 1 tbsp of coconut oil (-1.9) plus 1 tbsp cold-pressed flaxseed oil (+ 43.3); chopped walnuts (-44.4) with chopped macadamia nuts (-1.5). The repaired recipe had a score of +3.5 (vs. the original -9.2). With **Omega Meals** to keep track of details, **substitutions** are easy.

Potato salad (-21) is much more negative than potatoes (-0.2), and coleslaw (-20 to -36) is much more negative than cabbage (+0.2). Stores sell many mayonnaise items (-31 to -68) that give meals negative outcomes. Fat-free mayonnaise (0) does not do that. **Omega Meals** files have a recipe for omega-3 mayonnaise (+10). It uses fat-free egg substitute (0), lemon juice (-0.1), vinegar (0), salt (0), mustard (-2), coconut oil (-2) and flaxseed oil (+43).

Is chronic inflammation always part of aging?

Aging is time passing and experience accumulating. Time passing is constant for all. Experience makes all the difference in how we age. It brings HUFA-based adaptive responses that accumulate with time. Positive ones are growing and learning, while negative ones are obesity, misunderstanding, auto-immune events and inflammatory chronic conditions. Too much **n-6 HUFA action** shifts adapted healthy physiology to maladapted pathophysiology.

Many chronic immune-inflammatory conditions linked to HUFA balance are prevalent in older people. The conditions include atherosclerosis, thrombosis, heart attacks, immune-inflammatory disorders, asthma, arthritis, COPD, cancer spreading, dementia and length of stay in hospitals. Those conditions are not "aging", but unresolved experience accumulated over time. A challenge for wellness is to learn the **etiology** of the conditions so we can resolve or **prevent** their accumulation.

Over-active immune cells occasionally develop auto-antibodies against "self-proteins". Year by year, auto-antibodies accumulate, raising risk for more autoimmune inflammation amplified by n-6 HUFA and moderated by n-3 HUFA. Eating more n-3 than n-6 HUFA decreases such conditions and many accumulated chronic aches and pains familiar to elders. A name for **improved quality of life** and enhanced sense of well-being could be "delayed aging".

Young people also have HUFA balance affecting how they adapt to experiences. Behavior and mood disorders, anxiety, **depression**, suicide, oppositional and disruptive behavior, ADHD all change perceptions and create risk for further unwanted accumulated experiences in adult life.

It seems likely that Recipe Repairs which NIX the 6 and EAT the 3 can slow the accumulation of unwanted HUFA-based experiences for people of all ages.